MetaLife NEWS

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Just what happens to your die from the time it leaves your plant until it arrives back with the specified Metalife texture? The answer is A LOT!

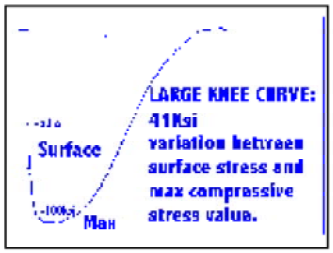
The "A LOT" consists of technical handling, thorough processing, and careful controls to assure the correct application and degree of compressive stress to your die. This begins with a recommended heat stress temper, in conjunction with cluster Rockwell "C" readings taken before and after temper. After this, a carefully controlled set of process parameters is selected based on these readings, your steel type, and die configuration. While being processed, almen test strips are used in conjunction with established known criteria to assure that the tool obtains the correct predicted amount and depth of compressive stress.

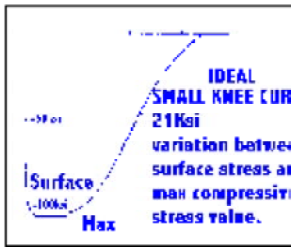
The texturing you see is a residual benefit but does not relate to how effectively Metalife has been applied. There may be instances where little to no texture is apparent such as for harder steels or tools that have had prior diffusion processes applied. The maximum compressive stress and depth of compression is actually higher for these steels than a softer tool steel that exhibits more texturing on the surface. The amount of texture is therefore not necessarily directly proportional to the amount of induced residual compressive stress.

The resulting textures, however, are due to Badger Metal carefully controlling the texturing media It is of utmost importance that the media be of the same size and shape. We classify our media using a real time 2-step method to first separate broken down media and then filter different sizes while processing. These two factors are extremely important if a uniform non-stressed layer of compressive stress is to be obtained. WHY? Broken down media (if not removed) leaves sharp cornered "divots" in the surface. These are stress concentrations that may give an appearance of more texturing to the surface, however, in actuality they act as fatal crack initiation sites. Different sized media also creates varying compressive stress profiles.

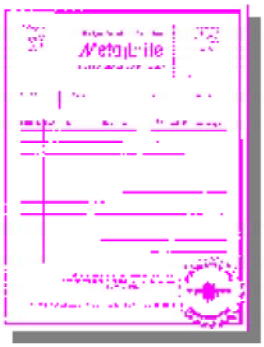
Badger Metal's knowledge, expertise, and X-ray diffraction database of numerous tool steels with different processing parameters ensures that our processing is done specific to your die's required parameters. These parameters are established in three important variables: A. Surface stress B. Maximum compressive stress, C. Depth of compressive stress layer. By knowing your die specifications such

an adequate compressive stress layer, but have t surface compression value match as close as possil the maximum depth of compressive stress. The ide compressive stress curve shows this as a small knee





A small knee provides maximum protection to preve new cracks from developing along with optimized co pression values to the entire die surface. This hel stop existing cracks that were not closed during pro essing due to their size or the die's access limitations



By carefully controlling our pro ess, we ensure that each tool ceives the correct treatment. H can you be sure that your die properly managed? You shou request the Metalife Certifica of Compliance which lists yo die components and correspondi parameters for each process. Th is your assurance that all specific tions addressed in this newslet were correctly applied.

If other sources claim to offer the same process a haven't discussed these issues with you, it is probal because they are not important issues to them. Badg Metal Tech knows their significance.

We are looking at new ways to make Metalife the be and most cost effective surface treatment availab We are conducting more test studies using combin tions of diffusion surface treatments along with evalu ing new media types, parameters, and applicati methods. When laser impaction becomes a viab commercial method for inducing higher levels of co pressive stress, Badger will be one of the first comp nies offering it. In 1999 we will introduce an improv Metalife with capabilities of closing larger heat chec

as material type , heat treatment, hardness, and surface enhancing properties, we know how it will respond to processing. Based on these criteria, we strive to obtain not only

and inducing higher levels of compressive stress. E ing the leader in this field, you can count on us to ke you advised of developments in this and the laser fiel